FIGURE 1a

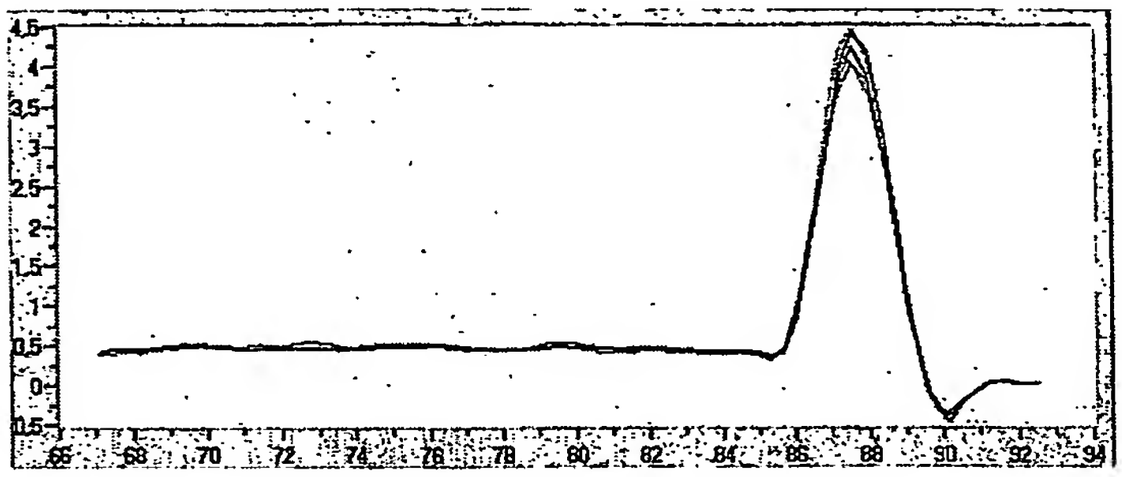


FIGURE 1b

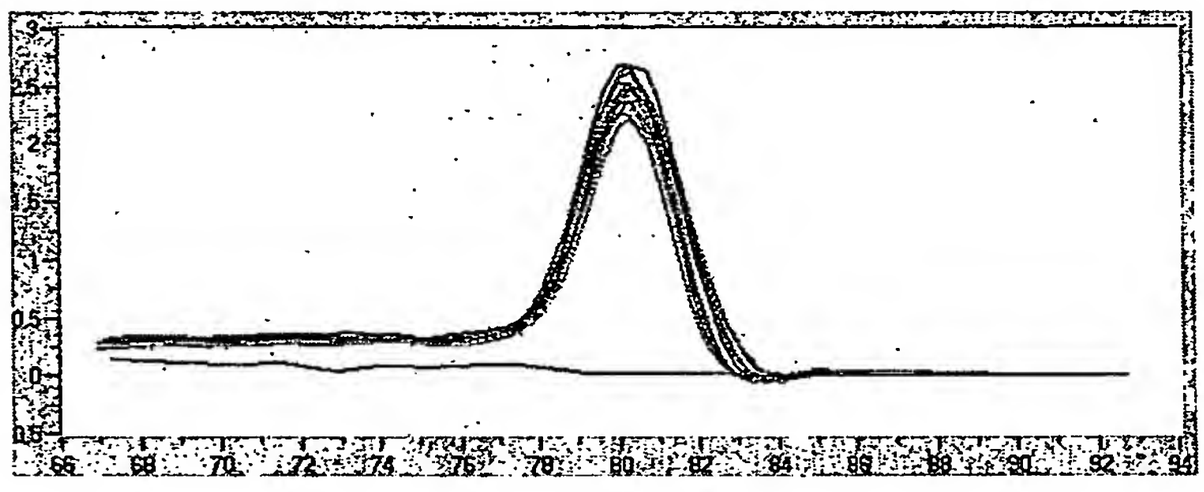


FIGURE 2

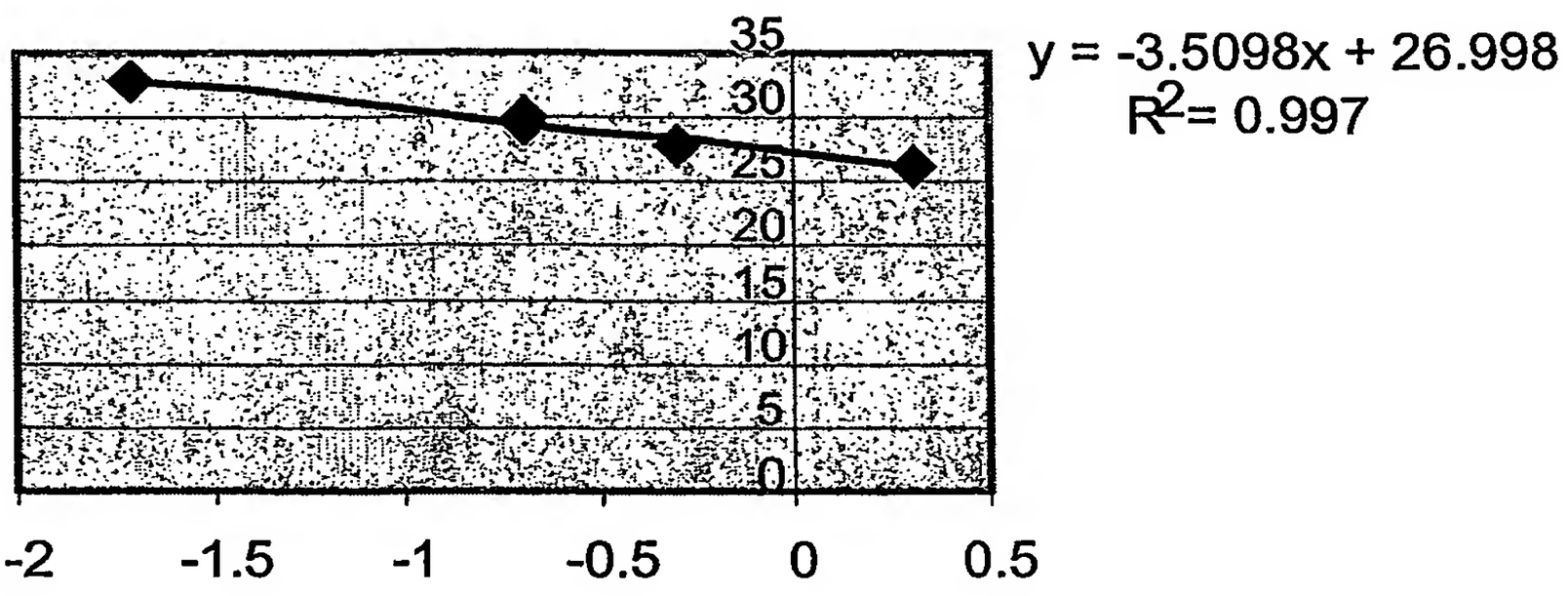


FIGURE 3

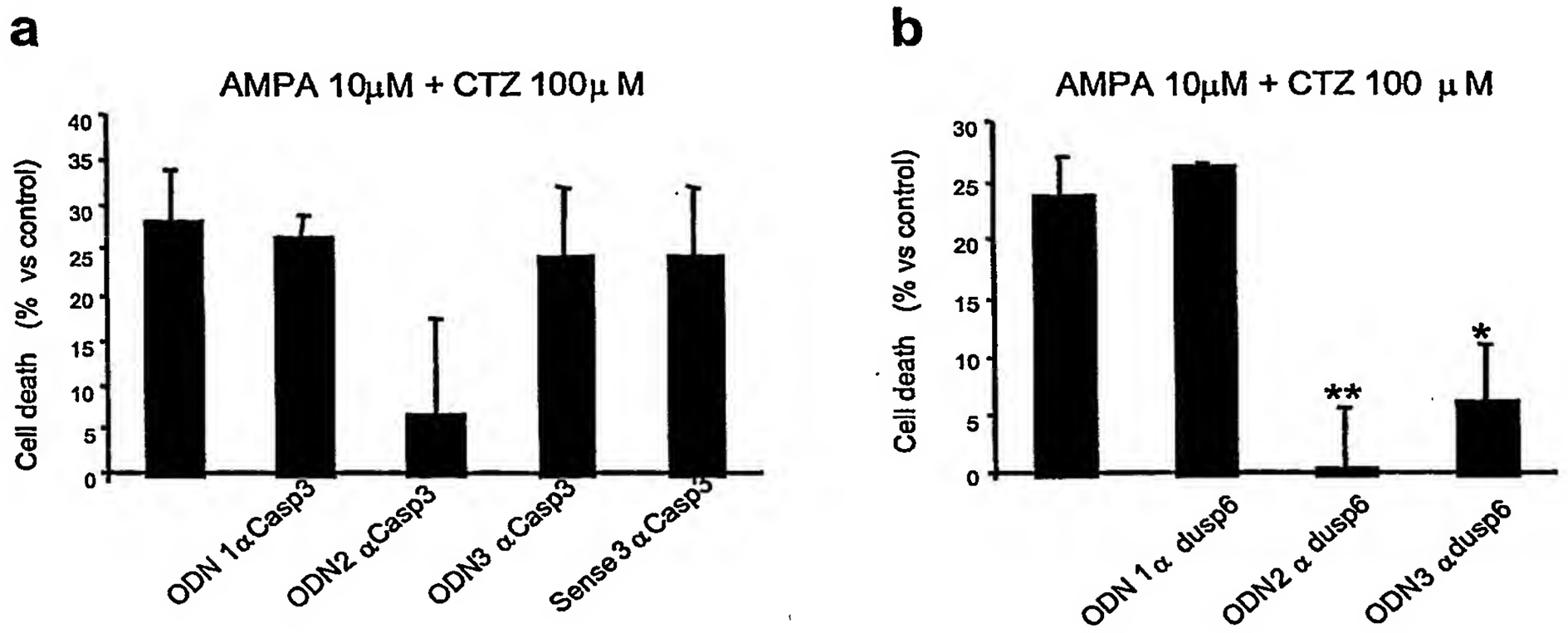
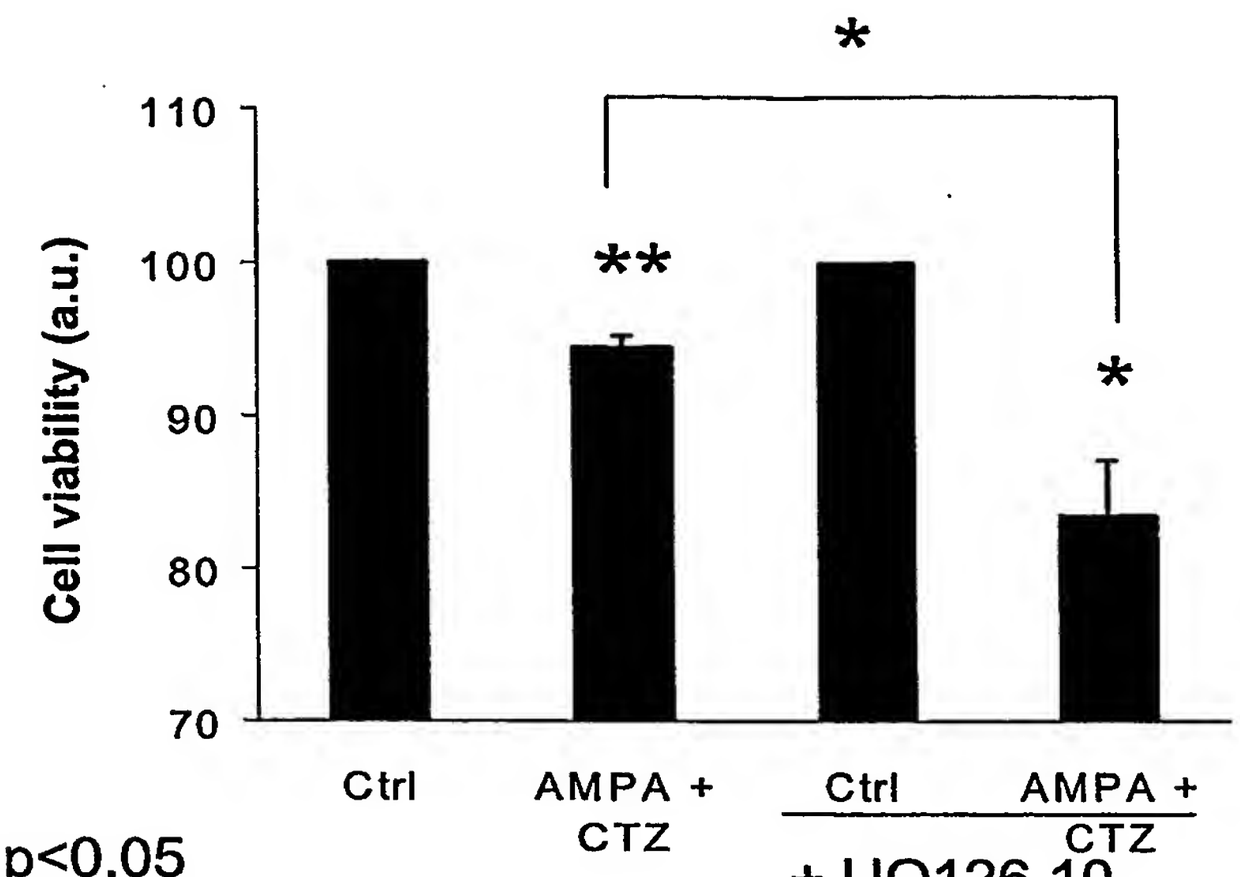

a
AMPA 10µM + CTZ 100µ M
Cell death (% vs control)
40
35
30
25
20
15
10
5
0
ODN 1αCasp3
ODN2 αCasp3
ODN3 αCasp3
Sense3 αCasp3
b
AMPA 10µM + CTZ 100 µ M
Cell death (% vs control)
30
25
20
15
10
5
0
**
*
ODN 1α dusp6
ODN2 α dusp6
ODN3 αdusp6

FIGURE 4



* p<0.05
**p<0.01
n=3

FIGURE 5

```
86.713% identity (88.783% ungapped) in 1716 nt overlap
(172-1875:189-1876)
              150        160        170        180        190        200
human   CACTAAGAGCCAGCGCTGCAGCTGGTGCAGAGAGAACCTCCGGCTTTGACTTCTGTCTCG
                                          ::::    :  : :  ::: ::::::  :::
rat     GATTCATTGACTCTGAGAGTGATCTGGTGCAGAGGGACCACCGGCTTGGCTTCTG--TCG
       160        170        180        190        200        210

              210        220        230        240        250        260
human   TCTGCCCCAAGGCCGCTAGCCTCGGCTTGGGAAGGCGAGGCGGAATTAAACCCCGCTCCG
         :: ::: ::  :::::::: ::::::::::::     :::: :::: :::::: ::::::
rat     CCTTCCCTAA--CCGCTAGCTTCGGCTTGGGAA----AGGCCGAATCAAACCCGGCTCCG
         220          230        240          250        260        270

              270        280        290        300        310        320
human   AGAG-CGCACGTTCGCGCGCGGTGCGTCGGCCATTGCCTGCCCCGAGGGGCGTCTGGTAG
        :::: :: :  ::: : ::   ::: : ::::  :::::::: :::::::::::::: :::
rat     AGAGCCGGAGCTTCTCACGGCTTGC-TTGGCCTATGCCTGCCTCGAGGGGCGTCTGCTAG
              280        290        300        310        320

              330        340        350        360        370        380
human   GCACCCCGCCCTCTCCCGCAGCTCGACCCCCATGATAGATACGCTCAGACCCGTGCCCTT
        :::::::::: ::::: ::::::::::::::::::::::::::::::::::::::::::
rat     GCACCCCGCCTTCTCCTGCAGCTCGACCCCCATGATAGATACGCTCAGACCCGTGCCCTT
     330        340        350        360        370        380

              390        400        410        420        430        440
human   CGCGTCGGAAATGGCGATCAGCAAGACGGTGGCGTGGCTCAACGAGCAGCTGGAGCTGGG
        ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
rat     CGCGTCGGAAATGGCGATCAGCAAGACGGTGGCGTGGCTCAACGAGCAGCTGGAGCTGGG
     390        400        410        420        430        440

              450        460        470        480        490        500
human   CAACGAGCGGCTGCTGCTGATGGACTGCCGGCCGCAGGAGCTATACGAGTCGTCGCACAT
        :::::: : :::::::::::::::::::: :::::::::: ::::::::::::::::::
rat     CAACGAACAGCTGCTGCTGATGGACTGCCGACCGCAGGAGCTGTACGAGTCGTCGCACAT
     450        460        470        480        490        500

              510        520        530        540        550        560
human   CGAGTCGGCCATCAACGTGGCCATCCCGGGCATCATGCTGCGGCGCCTGCAGAAGGGTAA
        ::: :: ::::::::::::::::::::::::::::::::::: :::::::::: ::
rat     CGAATCTGCCATCAACGTGGCCATCCCGGGCATCATGCTGCGGCGTCTGCAGAAGGGCAA
     510        520        530        540        550        560

              570        580        590        600        610        620
human   CCTGCCGGTGCGCGCGCTCTTCACGCGCGGCGAGGACCGGGACCGCTTCACCCGGCGCTG
        :::::::::::::::::: ::::::::: :::::::::::::::::::: ::: :::::::
rat     CCTGCCGGTGCGCGCGCTATTCACGCGCTGCGAGGACCGGGACCGCTTTACCAGGCGCTG
     570        580        590        600        610        620

              630        640        650        660        670        680
human   TGGCACCGACACAGTGGTGCTCTACGACGAGAGCAGCAGCGACTGGAACGAGAATACGGG
         :::::::::: :::::::::::::::::: :::::::::::::: ::::: :: ::
rat     CGGCACCGACACCGTGGTGCTCTACGACGAGAACAGCAGCGACTGGAATGAGAACACAGG
     630        640        650        660        670        680
```

```
                690        700        710        720        730        740
human   CGGCGAGTCGTTGCTCGGGCTGCTGCTCAAGAAGCTCAAGGACGAGGGCTGCCGGGCGTT
         :: :::::: : :::::::::::::::::::::: ::::: ::::::::::::::::::::
rat     TGGAGAGTCGGTCCTCGGGCTGCTGCTCAAGAAACTCAAAGACGAGGGCTGCCGGGCGTT
     690        700        710        720        730        740

                750        760        770        780        790        800
human   CTACCTGGAAGGTGGCTTCAGTAAGTTCCAAGCCGAGTTCTCCCTGCATTGCGAGACCAA
        :::::: :::::::::::::::::::::::: ::::::::: ::::::: ::::::::::::
rat     CTACCTTGAAGGTGGCTTCAGTAAGTTCCAGGCCGAGTTCGCCCTGCACTGCGAGACCAA
     750        760        770        780        790        800

                810        820        830        840        850        860
human   TCTAGACGGCTCGTGTAGCAGCAGCTCGCCGCCGTTGCCAGTGCTGGGGCTCGGGGGCCT
        :::::::::::::::: :::::::::: ::::: :::::::::::::: ::::::::::::
rat     TCTAGACGGCTCGTGCAGCAGCAGCTCCCCGCCCTTGCCAGTGCTGGGACTCGGGGGCCT
     810        820        830        840        850        860

                870        880        890        900        910        920
human   GCGGATCAGCTCTGACTCTTCCTCGGACATCGAGTCTGACCTTGACCGAGACCCCAATAG
        : :::::::::: :::::::::::::::::: ::::::::::::::::::::::::::::::
rat     GAGGATCAGCTCCGACTCTTCCTCGGACATTGAGTCTGACCTTGACCGAGACCCCAATAG
     870        880        890        900        910        920

                930        940        950        960        970        980
human   TGCAACAGACTCGGATGGTAGTCCGCTGTCCAACAGCCAGCCTTCCTTCCCAGTGGAGAT
        :::::: ::::: ::::: :: ::::::::::::::::::::::::::::::: ::::::::
rat     TGCAACGGACTCCGATGGCAGCCCGCTGTCCAACAGCCAGCCTTCCTTCCCGGTGGAGAT
     930        940        950        960        970        980

                990       1000       1010       1020       1030       1040
human   CTTGCCCTTCCTCTACTTGGGCTGTGCCAAAGACTCCACCAACTTGGACGTGTTGGAGGA
         :::::::::: ::: :::::::::::: ::::: :: ::::::::::::::::: ::
rat     TTTGCCCTTCCTTTACCTGGGCTGTGCCAAGGACTCTACTAACTTGGACGTGTTGGAAGA
     990       1000       1010       1020       1030       1040

               1050       1060       1070       1080       1090       1100
human   ATTCGGCATCAAGTACATCTTGAACGTCACCCCCAATTTGCCGAATCTCTTTGAGAACGC
         :: :::::::::::::::::::::::::::::::: :::: ::::: :::::::: ::
rat     GTTTGGCATCAAGTACATCTTGAACGTCACCCCCAATCTGCCCAATCTGTTTGAGAATGC
    1050       1060       1070       1080       1090       1100

               1110       1120       1130       1140       1150       1160
human   AGGAGAGTTTAAATACAAGCAAATCCCCATCTCGGATCACTGGAGCCAAAACCTGTCCCA
        ::: ::::: :: :::::::::: :: ::::: :::::::::::::::::::::::::::
rat     AGGGGAGTTCAAGTACAAGCAAATTCCTATCTCTGATCACTGGAGCCAAAACCTGTCCCA
    1110       1120       1130       1140       1150       1160

               1170       1180       1190       1200       1210       1220
human   GTTTTTCCCTGAGGCCATTTCTTTCATAGATGAAGCCCGGGGCAAGAACTGTGGTGTCTT
        :::::::::::::::::::::::::::::::::::: ::::: :::::::::::: :
rat     GTTTTTCCCTGAGGCCATTTCTTTCATAGATGAAGCCCGAGGCAAAAACTGTGGTGTCCT
    1170       1180       1190       1200       1210       1220
```

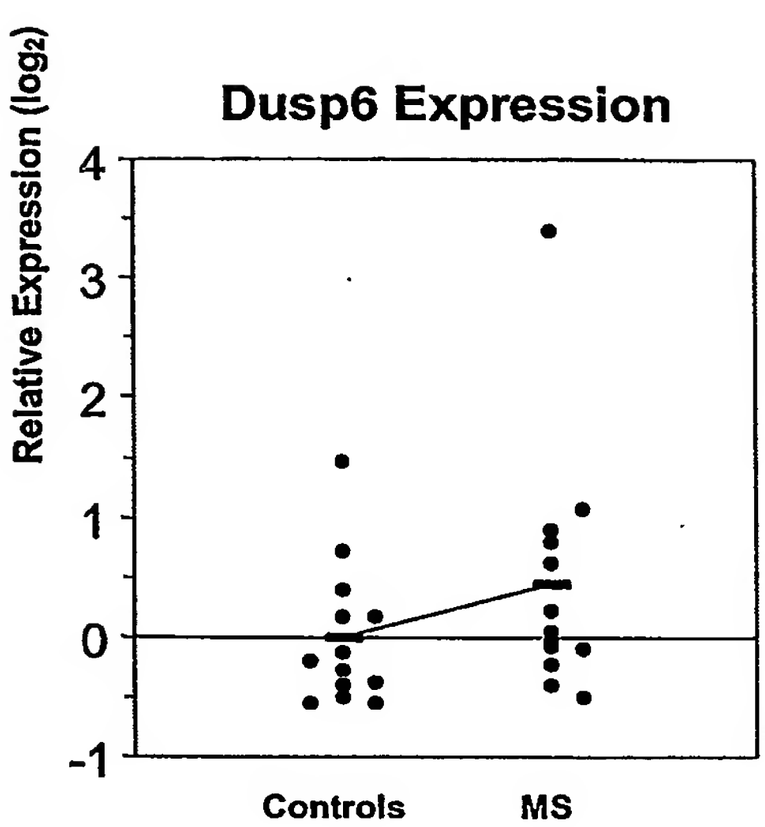
```
            1230       1240       1250       1260       1270       1280
human   GGTACATTGCTTGGCTGGCATTAGCCGCTCAGTCACTGTGACTGTGGCTTACCTTATGCA
        ::: :::::::::: ::::: :::::::: ::::: ::::: ::::::::::::::::
rat     GGTGCATTGCTTGGCGGGCATCAGCCGCTCCGTCACGGTGACAGTGGCTTACCTTATGCA
    1230       1240       1250       1260       1270       1280

            1290       1300       1310       1320       1330       1340
human   GAAGCTCAATCTGTCGATGAACGATGCCTATGACATTGTCAAAATGAAAAAATCCAACAT
        :::::::::  :::: :::::::::: :::::::::::::::::::::: :: ::::::::
rat     GAAGCTCAACTTGTCCATGAACGATGCTTATGACATTGTCAAAATGAAGAAGTCCAACAT
    1290       1300       1310       1320       1330       1340

            1350       1360       1370       1380       1390       1400
human   ATCCCCTAACTTCAACTTCATGGGTCAGCTGCTGGACTTCGAGAGGACGCTGGGACTCAG
         :: :: :::::::::::::::::: :::::::: ::::: :: ::::: ::::::::::
rat     CTCTCCCAACTTCAACTTCATGGGCCAGCTGCTTGACTTTGAAAGGACCCTGGGACTCAG
    1350       1360       1370       1380       1390       1400

            1410       1420       1430       1440       1450       1460
human   CAGCCCATGTGACAACAGGGTTCCAGCACAGCAGCTGTATTTTACCACCCCTTCCAACCA
        :::::: ::::::::  : :: :: :::::::::: :: :: ::: : :: ::::::::
rat     CAGCCCCTGTGACAATCGTGTCCCCGCACAGCAGCTCTACTTCACCGCGCCCTCCAACCA
    1410       1420       1430       1440       1450       1460

            1470       1480       1490       1500       1510       1520
human   GAATGTATACCAGGTGGACTCTCTGCAATCTACGTGAAAGACCCCACACCCCTCCTTGCT
        :::::: ::::: :::::::: :::::::::::::::::: : :: :::: :::: ::
rat     GAATGTCTACCAAGTGGACTCCCTGCAATCTACGTGAAAGGCACC-CACCTTTCCTAGCC
    1470       1480       1490       1500       1510       1520

            1530       1540       1550       1560       1570
human   GGAATGTGTCTGGCCCTTCAGCAGTTTCTCTT-GGCAGCATCAGCTGGGCTGCTTTCTTT
        :: : ::::::  :  : :  :::::::::: ::::::::  :  ::::::::::::
rat     GGGA-GTGTCT--CATTCCTTCAGTTTCTCTTGGGCAGCATCGACCAGGCTGCTTTCTTT
     1530          1540       1550       1560       1570       1580

    1580       1590       1600       1610       1620       1630
human   GTGTGTGGCCCCAGGTGTC-AAAATGACACCAGCTGTCTGTACTAGACAAGGTTACCAAG
        :::::::::::::::::: :::::: :::::::::::::: :::::::::: :::::
rat     GTGTGTGGCCCCAGGTGTCAAAAATGTCACCAGCTGTCTGTATTAGACAAGGTTGCCAAG
         1590       1600       1610       1620       1630       1640

     1640       1650       1660       1670             1680       1690
human   TGCGGAATTGGTTAATACTAACAGAGAGATTTGCTCCATTC-----TCTTTGGAATAACA
        :::  ::::::::: :::  :  ::::::::::::::::     : :::::::  :::
rat     TGCAAAATTGGTTATTACGGAGGGAGAGATTTGCTCCATTCATTGTTTTTTGGAAGGACA
         1650       1660       1670       1680       1690       1700

          1700       1710       1720       1730       1740       1750
human   GGACATGCTGTATAGATACAGGCAGTAGGTTTGC-TCTGTACCCATGTGTACAGCCTACC
        ::  ::::::: ::::: :::::: ::::::::: : :::::::       :::::::::
rat     GGGTATGCTGTCTAGATCCAGGCAATAGGTTTGCTTTTGTACCC-------CAGCCTACC
         1710       1720       1730       1740             1750
```

```
          1760       1770       1780          1790       1800
human   CATGCAGGGACTGGGATTCGAGGACTTCCAG---GCGCATAGGGTAGAACCAAATGATAG
        :: ::::::::::    ::      : :::::    : :  ::::  : ::  :    :   :
rat     CAAGCAGGGACTGGACCTC-----CATCCAGATAGAGGGTAGGACA-AAGGAGCCG--GG
     1760       1770            1780       1790        1800         1810

    1810       1820       1830       1840       1850       1860
human   GGTAGGAGCATGTGTTCTTTAGGGCCTTGTAAGGCTGTTTCCTTTTGCATCTGGAACTGA
        : ::::::::::::::: ::::::::    :: :::::::::: ::::::::::::   :
rat     GATAGGAGCATGTGTTCCTTAGGGCCACATATGGCTGTTTCCTGTTGCATCTGGAACCAA
              1820       1830       1840       1850       1860       1870

    1870       1880       1890       1900       1910       1920
human   CTATATAATTGTCTTCAAGTGAAGACTAATTCAATTTTGCATATAGAGGAGCCAAAGAGA
        ::::::
rat     CTATATTGTCTTCAGTGAAGACTGATTCAACTTTGCGTATAGTGGAGCCAAAGAGATTTT
              1880       1890       1900       1910       1920       1930
```

FIGURE 6

```
98.425% identity (98.425% ungapped) in 381 aa overlap (1-381:1-381)

                10        20        30        40        50        60
human   MIDTLRPVPFASEMAISKTVAWLNEQLELGNERLLLMDCRPQELYESSHIESAINVAIPG
        ::::::::::::::::::::::::::::::.::::::::::::::::::::::::::::
rat     MIDTLRPVPFASEMAISKTVAWLNEQLELGNEQLLLMDCRPQELYESSHIESAINVAIPG
                10        20        30        40        50        60

                70        80        90       100       110       120
human   IMLRRLQKGNLPVRALFTRGEDRDRFTRRCGTDTVVLYDESSSDWNENTGGESLLGLLLK
        :::::::::::::::::: :::::::::::::::::::.:::::::::::::.::::::
rat     IMLRRLQKGNLPVRALFTRCEDRDRFTRRCGTDTVVLYDENSSDWNENTGGESVLGLLLK
                70        80        90       100       110       120

               130       140       150       160       170       180
human   KLKDEGCRAFYLEGGFSKFQAEFSLHCETNLDGSCSSSSPPLPVLGLGGLRISSDSSSDI
        ::::::::::::::::::::::.::::::::::::::::::::::::::::::::::::
rat     KLKDEGCRAFYLEGGFSKFQAEFALHCETNLDGSCSSSSPPLPVLGLGGLRISSDSSSDI
               130       140       150       160       170       180

               190       200       210       220       230       240
human   ESDLDRDPNSATDSDGSPLSNSQPSFPVEILPFLYLGCAKDSTNLDVLEEFGIKYILNVT
        ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
rat     ESDLDRDPNSATDSDGSPLSNSQPSFPVEILPFLYLGCAKDSTNLDVLEEFGIKYILNVT
               190       200       210       220       230       240

               250       260       270       280       290       300
human   PNLPNLFENAGEFKYKQIPISDHWSQNLSQFFPEAISFIDEARGKNCGVLVHCLAGISRS
        ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
rat     PNLPNLFENAGEFKYKQIPISDHWSQNLSQFFPEAISFIDEARGKNCGVLVHCLAGISRS
               250       260       270       280       290       300

               310       320       330       340       350       360
human   VTVTVAYLMQKLNLSMNDAYDIVKMKKSNISPNFNFMGQLLDFERTLGLSSPCDNRVPAQ
        ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
rat     VTVTVAYLMQKLNLSMNDAYDIVKMKKSNISPNFNFMGQLLDFERTLGLSSPCDNRVPAQ
               310       320       330       340       350       360

               370       380
human   QLYFTTPSNQNVYQVDSLQST
        :::::.:::::::::::::::
rat     QLYFTAPSNQNVYQVDSLQST
               370       380
```

FIGURE 7


Dusp6 Expression
Relative Expression (lo
4
3
2
1
0
-1
Controls
MS